REMARKS

Claims 6, 12 and 20 remain in the application.

Paragraph 33 of the specification is amended to remove the embedded hyperlink. It is respectfully submitted that the amended specification complies with the requirements of MPEP § 608.01. The underscore is required to indicate added material and is not a part of the amended paragraph. The Examiner is invited to contact the undersigned if the amended paragraph is not deemed sufficient in order to suggest a manner to amend the paragraph to remove the hyperlink.

Claim 6 stands rejected under 35 USC 103(a) as being unpatentable over Gao et al (Gao) (US 2004/0067754 A1) in view of Harvey et al (Harvey) (US 2004/0133563 A1).

Gao describes an admission control arrangement that uses gateway servers for establishing a handover path. In contrast, the claimed invention claims a distinct approach to solve problems from a completely different perspective. Gao solves the problem from the network operator's perspective, assuming that there are centralized servers that can be used to initiate network handoff. In contrast, the claimed invention is fully distributed, and addresses the problem purely from a device perspective.

The claimed invention differs from Gao in several significant aspects:

(1) According to communication layer classification, the claimed invention belongs to the application layer, while the Gao method belongs to the network layer.

(2) In accordance with the claimed invention, network handoff is initiated by devices, while under the schemes proposed by Gao, network handoff is initiated by networks or network operators.

(3) The claimed invention is network-agnostic, while Gao's method is network-dependent and carrier-dependent. Gao's method assumes that a heterogeneous network, for instance, CDAM or WLAN, are under the control of one network carrier.

(4) The claimed invention is fully distributed (each node makes its own decision about network switch) and Gao is centralized (a network operator makes decisions on behalf of users).

The difference between the present invention and Gao is more clearly shown in the following diagrams.

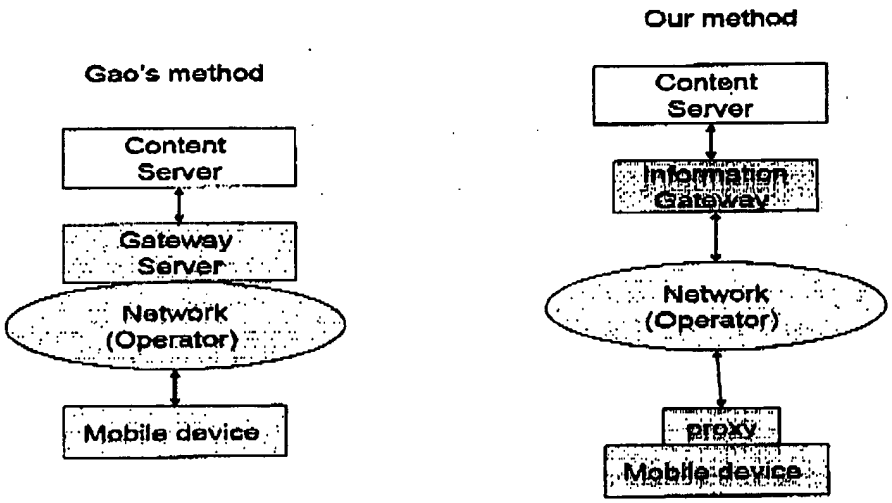


Figure 1: Structural Difference between claimed and Gao Methods

The following example is given to illustrate the difference between the claimed method and the Gao method.

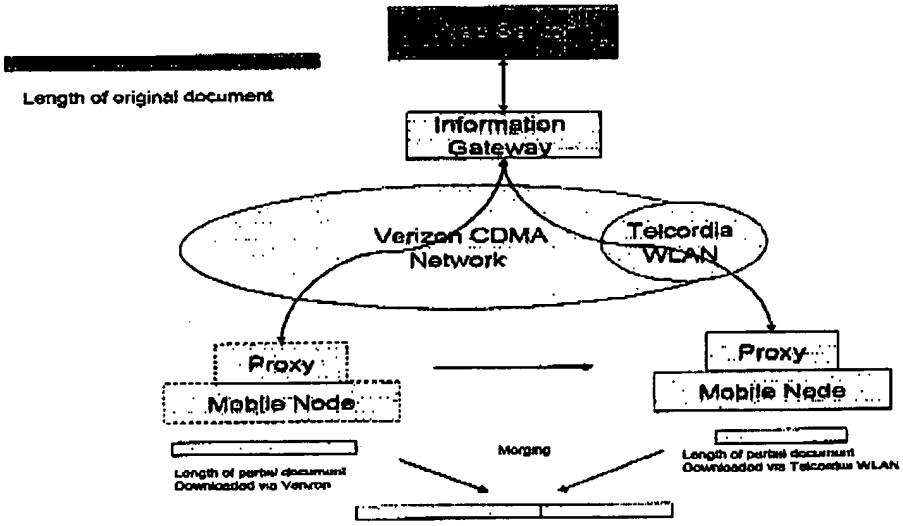


Figure 2: An illustrative example of network handover between Verizon CDMA and Telcordia WLAN

Figure 2 shows a commonly encountered scenario in which a mobile node equipped with dual network interfaces, such as Verizon CDMA wireless network and a WLAN (IEEE 802.11). It will be understood that other wireless networks may be involved, a Verizon CDMA is shown for illustrative purposes only and not for the purpose of limiting the scope of the description. The mobile node initially starts a HTTP session via the Verizon CDMA network and then moves to an office in Telcordia (or any WLAN location). The use of Telcordia is again for illustrative purposes and not for providing a limitation. In the claimed scheme, the proxy can sense the presence of a WLAN and automatically relinquish the CDMA connectivity and connect to the WLAN while maintaining the "continuity" of the ongoing session.

Since Telcordia WLAN operates independently from the Verizon CDMA network, there is no "super" centralized server that can assist network handoff from the Verizon CDMA to the Telcordia WLAN. Note that there is a firewall between the Telcordia network and the outside world, which only allows client-initiated traffic and

blocks all traffic that are initiated by servers residing outside of the Telcordia network. Therefore, Gao's method fails in this commonly encountered scenario. Our claimed method, which by its nature is network agnostic, focuses on cross-carrier heterogeneous network handoff, which is completely beyond the scope of the Gao methods.

Referring to Harvey, the method proposed by Harvey refers to session management in a Web browser. The idea behind the session ID is described as follows: upon receipt of a request from a web client, the web server will generate a session ID associated with that web page. The session ID will be stored locally in the web browser and will be included into the request to the web server for the same target web page. The web server can determine whether the request is new with respect to the corresponding web page by examining whether the session ID is associated with that web page. The session ID is used to manage freshness of content and reduce network traffic.

In contrast, the claimed invention can be described as follows:

In order to network-agnostic HTTP session continuity, the claimed method uses a multi-tiered architecture that interposes itself between the Web browser and the Web server, which comprises two subsystems: client-side proxy and information gateway (IGW hereafter). The addition of the client-side proxy and the IGW is to provide a shield that supports automatic and transparent HTTP failure recovery while keeping the existing Web server and Web browser intact.

The primary task of the client-side proxy is to intercept HTTP requests from the Web client by splitting connectivity into HTTP local and remote connections. The HTTP session layer is to keep track of each ongoing HTTP session (byte-count and time stamp of each ongoing session) and to trap various system events generated by the network sensing layer. Upon receipt of event notification such as network failure, the HTTP session layer can automatically restore the affected HTTP sessions by exchanging session information with its counterpart at the IGW. In addition, it is able to dynamically select the best network interface in the presence of multiple networks, in terms of bandwidth

capacity, which is essentially a key element of network adaptation that can be used to resolve issues of network hysteresis.

Therefore, the claimed method is completely independent of web Session management. The goal of the claimed method is to keep the existing Web server and Web browser intact, while supporting automatic and transparent HTTP failure recovery in failure-prone wireless network environments.

It is worth mentioning that our recovery method refers to packet-level failure recovery, rather than session-level failure recovery. The definitions of packet-level failure recovery and session-level failure recovery are given as follows.

Definition of packet-level failure recovery: A failure recovery is said to be packet-level if the failure recovery is **divisible** with respect to the point of attachment (network)

Definition of session-level failure recovery: A failure recovery is said to be session-level if the failure recovery is **indivisible** with respect to the point of attachment (network)

Packet-level HTTP failure recovery differs from the session-level counterpart in its ability to avoid a HTTP session being restarted from the beginning when a failure occurs, meaning that constituent data packets obtained from different points of attachments (networks) can be seamlessly pieced together. The packet-level HTTP failure recovery improves upon the session-level counterpart in its failure-recovery efficiency, resulting in a substantial bandwidth saving, making it appropriate in failure-prone vehicular environments, for example.

For example, packet-level failure recovery (network handover is considered as a failure, because it disrupts ongoing sessions) allows data packets from a CDMA and WLAN to be pieced together to form the complete HTTP document without needing to restart file downloading from the beginning during network handover. While session-

level recovery failures have to restart file downloading from the beginning in the presence of network handover.

Therefore, it is respectfully submitted that Gao and Harvey cannot be combined in any manner to teach or even suggest the invention claimed in Claim 6 and hence, Claim 6 should be deemed allowable over Gao in view of Harvey.

Claim 12 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Harvey and further in view of Oh et al (Oh) (US 6,714,789 A1).

Gao and Harvey have been discussed above in connection with Claim 6. The method proposed by Oh refers to frequency resource sharing technology (see, summary and figures). This method belongs to the link layer and is carrier-dependent.

In contrast, the claimed method is completely independent of the frequency being used. From the viewpoint of communication layer classification, the claimed method is in the application layer, while the method in Oh is in the link layer. Handover is initiated by the mobile host, without needing help from the network (using the multi-homing capacity in mobile host) and the method supports HTTP packet-level session continuity during network handover. Contrariwise, the claimed method belongs to the application-layer.

It is respectfully submitted that Gao, Harvey and Oh, neither singly nor in any combination, teach or even suggest the invention claimed in Claim 12 and hence, Claim12 should be deemed allowable over the art of record.

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Harvey and further in view of Belkin et al (Belkin) (US 2005/0070288 A1).

Gao and Harvey are discussed above in connection with Claim 6. The method proposed by Belkin can be best summarized as stated in paragraph [0023] that "both

networks 106, 108 via the switching functions 110, 112 will likely be intercoupled to a public switched telephone and data network and thus coupled to each other." This approach is network carrier dependent. For instance, mobility manager in the Belkin scheme is a network element that is directly controlled by a network carrier. Handover is initiated by the network. The scheme does not support (TCP-based, HTTP) session continuity and the approach belongs to the network layer.

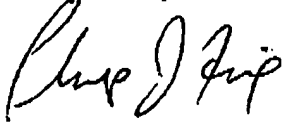
In contrast, the claimed invention is network-agnostic and carrier-independent. In short, the novel approach is a network overlay approach. Handover is initiated by the mobile host, without needing help from a network (using the multi-homing capacity in mobile host). The method is carrier-independent and network-independent and supports HTTP packet-level session continuity during network handover. Finally, the claimed architecture belongs to the application-layer.

It is respectfully submitted that Gao, Harvey and Belkin cannot be combined in any manner to render obvious the invention set forth in Claim 20 and hence, Claim 20 should be deemed allowable over the art of record.

Reexamination, reconsideration and allowance of claims 6, 12 and 20 are respectfully requested.

Authorization is hereby given to charge Deposit Account No. 02-1822 the fee due under 37 CFR 1.17(a) of $1020.00 for a three (3) month extension of the time to reply to the Office Action.

Respectfully submitted,



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